The secrets of the box

PROJECT GUIDE

DIFFICULTY: Intermediate
TIME: 12 hours
TYPE: Furniture

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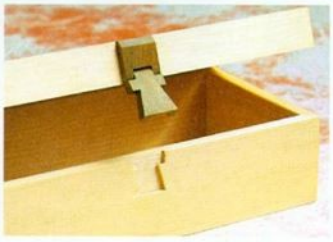


Andrew Crawford is renowned for his exquisite boxes. So we asked him to produce an exclusive design only using wood. Now you too can make a Crawford box

The plainness of Andrew's pine box enhances the effect of the lignum vitae hinges. It is interesting to imagine what the box would look like if the carcase was made of walnut and the hinges of maple

As well as boxes Andrew Crawford makes decorative chopsticks, and even restores the occasional musical instrument. He also teaches flute playing

CCESS STORY
ged-wooden box

The chess box is made from burr maple veneer, with all the figure of quilted and bird's eye maple

MATERIALS YOU WILL NEED

OFFCUTS
The box can be made from thin softwood or hardwood offcuts

HINGES
Lignum vitae is not easy to obtain and the source cannot be guaranteed as sustainable. Any other close grained timber will do, but it is best to have a colour contrast

Making boxes is rapidly becoming a major branch of woodwork, with more and more craftspeople producing only small containers. Andrew Crawford is up amongst the best of them, and his reputation is such that he has now been asked to write a book – *The Book of Boxes* – to be published later in 1993.

He will be making some pieces exclusively for the book, and looking at the work of other box makers. His boxes are distinquished by their intricate inlaying and curved shapes. His harlequin patterns of coloured veneer are now familiar and have a lasting popularity. A more recent development is to laminate veneers in a curved former and inlay them on and around boxes like ribbon lying across the surface.

The benefit of making boxes is that it takes up so little space. Andrew shares a workshop with antique restorer Richard Mark-Wardlaw. When Richard is very busy – most notably with a pair of huge partners desks recently – Andrew's allotted area turns into a cubicle with walls of antiques.

In 1993 they will be celebrating 10 years in the London workshop. Their pool of equipment – including a kit-made bandsaw with router slung under the table – continues to serve their varied needs. They also have a Sheppach planer-thicknesser, a small Black and Decker drill stand, an old lathe, and countless chisels and planes.

For his curved boxes Andrew works mostly with shaped scrapers after removing the bulk of the waste with hollowing planes. He uses MDF for the groundwork of those boxes because it is so stable and easy to shape. The trouble with birch ply, which he chooses for making straight-sided boxes, is that the laminations tend to show through the veneer.

Andrew's path as a box maker has been gradual. He moved into woodwork from rock music via flute playing at the Royal College of Music and courses in instrument repair and guitar making at the London College of Furniture. His first boxes were presents, and a number have been designed to hold musical instruments.

Most recently Andrew has been making boxes to hold paints. One of his latest pieces incorporates inlaid curved veneer, sweeping across and inside the box. All he does is cut a curvy line through a piece of MDF using his bandsaw – though a jigsaw, coping saw or fretsaw would do just as well – and then uses the two pieces as formers to glue together four or five pieces of coloured veneer. Once these are dry, he cuts the curved block into thin veneers on the bandsaw and inlays them into veneer.

The Brief for a Box

We asked Andrew to try something new. Rather than use one of his existing designs, we wanted him to make a box using only wood. He had always relied on brass for hinges and catches, so the challenge of making his own fittings was inviting, especially as he had some old lignum vitae lying around.

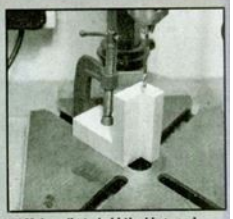
The idea was that he would produce a simple box construction, concentrating

Andrew Crawford makes his Harlequin curved boxes from stepped blocks of MDF. He starts with a piece of 18mm (¾in) thick MDF, and then glues on layers of 6mm (¼in) MDF. He hollows the blocks with a hollowing plane, glues up the box and then shapes with scrapers

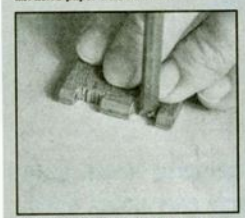
Now learn the secrets behind the box

1 Having glued up the box, leave it to dry and then smooth all round on abrasive paper held in a vice

2 When cutting the lid from the base use thin wedges to stop the saw binding or making marks



3 Make a jig to hold the hinge and catch blanks upright as you drill the pin holes with a 2.8mm bit



7 Having cut the shoulders pare the bottom of each notch, gradually moving towards the line

8 Before dividing the hinge halves clean up the shoulders. Do as much as possible before separating the halves

9 Insert the pin into the double hinge without glue, so that it is a firm fit, but does not split the wood

Cutting list

	MATERIAL	QTY	LENGTH	WIDTH	THKNS
A Front and back	Pine	2	198mm 7 13/32in	58mm 2 9/32in	6mm 1/4in
B Ends	Pine	2 3 11/16in	94mm 2 9/32in	58mm 1/4in	6mm
C Top and bottom	Pine	2	198mm 7 13/32in	98mm 3 7/8in	4mm 5/32in
D Hinges and catch	Lignum vitae	3	42mm 1 21/32in	18mm 23/32in	6mm 1/4in

on the fittings. The carcase is made from offcuts of thin pine, with the ends fitting in rebates in the front and back. The top and bottom are simply glued to those parts. As a result the box can be made quickly and the end-grain frames the ends as an interesting feature.

How to Make the Box

1 Having planed the front, back and ends to the right thickness, cut the ends to length. Bear in mind that they must be shorter than the finished width of the box by the depth of the rebates. Cut the front and back overlength by 1mm (1/32in), and mark on the rebates. That way the overhang can be planed off true after the box has been glued up.

2 Cut the shoulder on the rebate with a saw and chop out the waste with a chisel. Alternatively use a router under a table. Andrew Crawford keeps the workpiece square to the cutter with a T-jig. He cuts a recess the same width and depth as the workpiece under one limb of the T, into which the piece fits. He backs the piece into the router slightly to stop breakout at the end of the cut, then works against the fence, making the rebate about two-thirds the depth of the timber. This maximises the gluing area without diminishing strength.

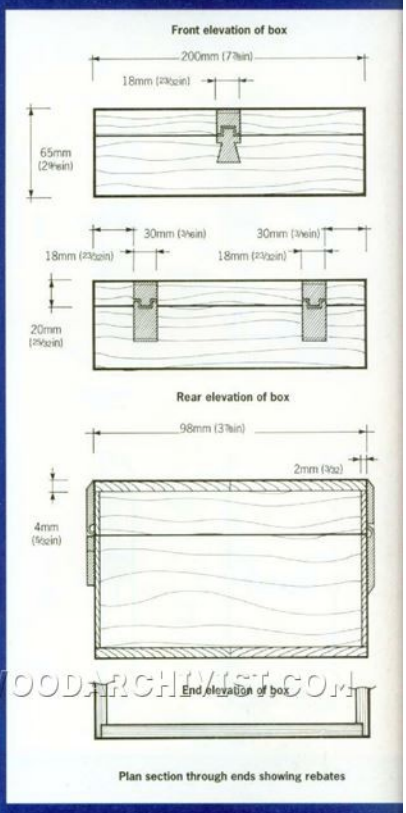
3 Glue up the carcase, using elastic bands to hold it as the adhesive sets, checking first that it is square by measuring the diagonals.

4 Andrew did not have wide enough pine to make the top and bottom from one piece each, so he glued them up from two. This also helps to lessen movement. For jointing mark across the two pieces for a register, and true the edges on a shooting board. Plane one piece face down and the other face up to ensure any discrepancies in the set-up are balanced. Glue one edge and rub them together for about 10 rubs, until they stick.

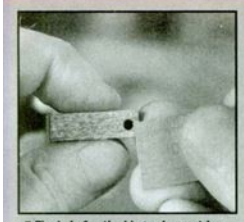
5 Glue on the top and bottom with a 1mm (1/32in) overlap all round. Watch out for them slipping. Start by clamping at one end gently, and then the other, tightening gradually. Clean up the ends, and then cut in half with a dovetail saw or a thin slot cutter mounted in a router. If cutting by hand, you will have to keep the lid and base apart by inserting thin wedges.

Fittings Made Easy

6 The pin in the hinges and catch is made of 3mm (1/8in) ramin dowel, which is available from model shops.

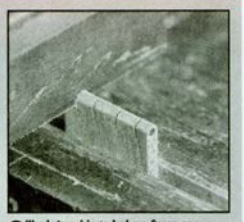


Plan section through ends showing rebates

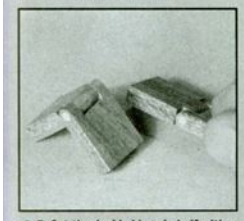


4 The hole for the hinge pin must be positioned 1.5mm (1/16in) from the end to get the right clearance

5 Round over the end of each part of the hinge either with a 3mm (1/8in) radius cutter or a block plane

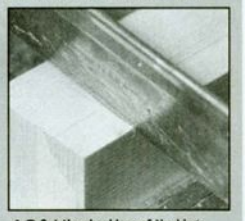


6 Work two hinge halves from one piece. Cut the other halves from grain consistent with the first pair

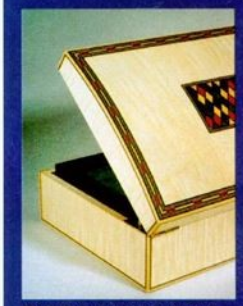


10 Cut the double hinge in half with a fine dovetail saw to produce the matching pair ready for fixing

11 Mark the outline of each hinge onto the box using a sharp knife, with the box taped together



12 Cut the shoulders of the hinge recesses as close to the line as possible, stopping short of the depth

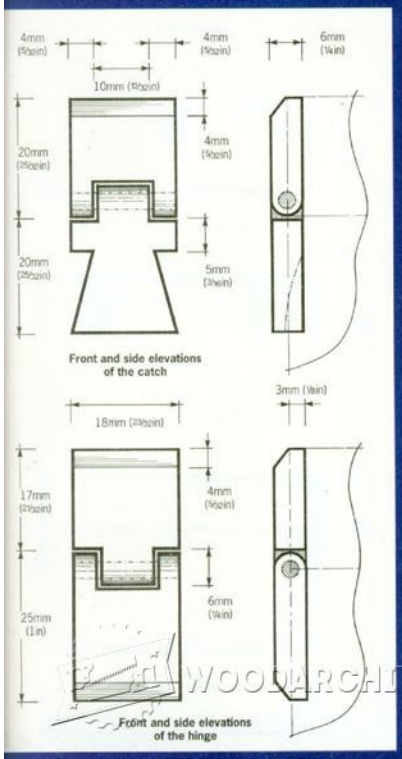


The fiddle back sycamore veneer is glued to two layers of 1.5mm birch ply, which are curved with formers

TOOLS YOU WILL NEED

- **DOVETAIL SAW** For joints and cutting off lid
- **BLOCK PLANE** For truing edges
- **6MM CHISEL** To clean up rebate and cut recesses
- **SCALPEL** Marking out
- **SQUARE**
- **RULER**
- **G-CRAMP OR VICE**

CESS STORY
den-hinged box



e pair of hinges and the catch are all made to be 6mm (¼in) thick. drew has learnt that by using a 2.8mm drill bit he can get a firm fit th 3mm (⅛in) ramin dowel, which is available from model shops

The hinges and catch are finished to 6mm (¼in) thick. The easiest way to make them is from two pieces of timber, so that once they have been drilled for the pin they only have to be cut into three to form three pairs. Andrew used a 2.8mm drill bit, and pillar drill. Test with your bits until you find one that produces a hole into which the dowel fits firmly. His bit was not long enough to drill all three components next to each other, so he had to do the hinges together and the catch alone.

7 Having drilled the hole, round over the end with a router cutter (Andrew uses a Trend 7D/1 cutter) or by planing and sanding. The hole must be 1.5mm (1/16in) from the rounded ends.

8 Mark in 6mm (¼in) from the end for the interlocking knuckles. Shape the knuckles with the aid of a saw, chisel and scalpel. The central portion must be double the width of the sides. Insert the dowel, making sure that you don't push too hard and split the wood, then cut the piece up to form the different components of the hinge and catch.

Andrew's tips for better boxes

1. When gluing tops and bottoms onto box carcases it is important that there are no blobs of glue inside the box. These will be difficult to remove later. Having glued the edges rub your thumb along the inside edge of the assembly to take off a little glue. You can also wax the inside.
2. Plan carefully for the function. If it is to hold jewellery it must be deep enough, with lid clearance for rings in a tray.
3. Use bright veneers with pale timbers like maple.
4. Scalpels are great for cutting outlines for inlaying.
5. For curved boxes use MDF, which can be shaped. Ply can give a striped effect, showing through the veneer with time.

9 Mark out the recesses for the catch and hinges, making sure that the pin is positioned with the edge of the box and the division of lid and base running through its mid point. That means the recess has to be exactly 3mm (⅛in) deep. Use a scalpel for marking as softwood is especially easy to crush.

You will find it easiest to cut the sides of the recesses with the scalpel. Hold the box together with masking tape as you cut the recesses. Glue the hinges in place, taking care not to get glue on the knuckle, and clean up. Insert the catch in the same way, but shape a finger recess under the face.

WARNING To hold the lid and box together as he fitted the hinges Andrew inserted pieces of thin ply inside the box. This works well, but make sure that the piece at the front of the box is not too high, as it may make it difficult to open the box.

Jargon Busting

T-jig
The cross-piece of the T runs against a fence on a table router or other machine. The stem is screwed underneath at 90° to the cross-piece, or joined with a halving joint. The workpiece fits in a recess under the cross-piece and is kept square by the stem.

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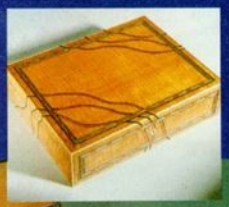
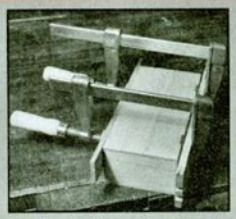
low to make a tight wooden hinge to finish the box

drew has recently been perimenting with minating coloured veneers a curved former. He uses F for the former and PVA all his gluing. He waters wn PVA by 10 per cent



one of Andrew's latest commissions this box was designed with nction in mind to take a set of artist's materials and brushes. The adrant hinges are from Liston Products (0543 578565), and cost £1.57 ch plus p&p and VAT. Liston are out of stock till after Christmas

13 Make a former to hold the box in place while fixing hinges. Knock the former away when the glue is set



14 Glue the hinges in place using blocks on either side of the box to protect it from the cramps

15 Make the catch in the same manner as the hinges, and then pare back the dovetail shape

16 Again tape the box together while cutting out the catch recess, having marked with a knife

17 Anyone who has made a box will understand the benefit of small cramps for holding tiny components

18 The finished piece shows the rounded finger slot under the catch, and dovetailed catch recess